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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,506	06/06/2001	Matthew D. Giere	10006598-1	9309

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

07

Office Action Summary

Application No.

09/876,506

Applicant(s)

GIERE ET AL.

Examiner

LAM S NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-44, 46-79 and 81-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-44, 78, 79 and 81-83 is/are allowed.
- 6) ☒ Claim(s) 46-49, 52-61, 63-69 and 72-77 is/are rejected.
- 7) ☒ Claim(s) 50-51, 62, 70-71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 46-49, 52-61, 63-66, 67-69, 72-75, 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (US 6053599) in view of Steinfield et al. (US 5984464).

Referring to claims 46, 56, 65, 73-74:

Maeda discloses a fluid ejecting printhead, comprising:

a substrate having a surface (*FIG. 19-21, 29-30, element 8*);

a columnar group of drop generators (*FIG. 19-21, 29-30, element 5*) formed on the surface that are arranged into subgroups each comprising at least two drop generators (*FIG. 19-21: Two adjacent nozzles 5 corresponding to two ink chambers provided ink from the same ink flow path 7 form a subgroup*), each of said subgroups supplied with fluid through a fluid supply slot, each subgroup being fluidically isolated from other subgroups on the surface (*FIG. 21: Each subgroup is isolated from others by element 4*); and

printhead electronics that provide firing pulses to the drop generators such that no two drop generators in the same subgroup are activated in sequence (*column 15, lines 15-25: The two heaters in each pair of channels are not driven successively*).

Maeda does not disclose an ink feed slot formed through the substrate to provide fluid to subgroups (**Referring to claims 69, 73**), wherein the columnar group of drop generators

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arranged in a column transverse to a direction of relative movement between the printhead and a print medium, wherein the printhead electronics activates the drop generators in said columnar group of drop generators one at a time or not simultaneously (**Referring to claims 47, 63, 72, 75**) wherein the columnar group of drop generators is a primitive, and the substrate comprises a plurality of primitives arranged in a column (**Referring to claims 48, 64**), further including a fluid supply fluidically coupled to the fluid feed slot to supply the feed slot with fluid of liquid ink (**Referring to claims 52-53, 59-60, 67-68**), wherein the nozzles of each nozzle column have a pitch of 600 nozzles per inch (npi) (**Referring to claim 77**).

Steinfeld et al. discloses a printhead having a column of drop generators/nozzles (*FIG. 14, element 17*) arranged in a direction that transverses to a direction of relative movement between the printhead and a print medium (*FIG. 10, 25-26*), an ink feed slot/hole/opening formed through a substrate of the printhead (*FIG. 13, element 52*), a compact substrate of increased stability and structural integrity to provide a high resolution 600 dot-per-inch nozzle array (*Abstract*), wherein the associating firing chambers of the drop generators/nozzles are grouped in a plurality of primitives arranged in columns (*FIG. 14*), wherein only one firing chamber is activated at a time (*column 5, lines 20-27*), wherein ink liquid is provided to the ink feed slot from an refillable ink tank (*FIG. 1, element 12*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printhead disclosed by Maeda such as arranging the nozzles/drop generators in a plurality of primitives in which only one nozzle/drop generator is activated at a time as disclosed by Steinfeld et al. The motivation of doing so would have been to reduce the number of interconnection components needed to electrically connect the printhead

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to the printer unit in order to improve production and operating efficiency as taught by Steinfield et al. (*column 3, lines 7-11*).

Maeda also discloses the following claimed invention:

Referring to claims 49, 55, 61: wherein each subgroup includes a chamber and at least two firing resistors and a pair of drop generators (*FIG. 29-30: Each subgroup has two firing resistors 6 corresponding to two nozzles 5*).

Referring to claim 54: wherein the thin film layer comprises a plurality of thin films, the thin film layer forming heater resistors in each of the drop generators (*FIG. 29-30, element 6*).

Referring to claim 57: further comprising an apparatus for imparting relative motion between the printhead substrate and the print media (*FIG. 31*).

Referring to claims 58, 66: providing fluid to the subgroups from a common fluid source through the slot (*FIG. 29-30, element 8*).

Referring to claim 73: a barrier/orifice structure supported by the substrate and defining an array of nozzles arranged in a plurality of nozzle columns and an array of firing chambers in correspondence with the array of nozzles (*FIG. 29-30, element 4*).

2. Claim 76 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (US 6053599) in view of Steinfield et al. (US 5984464), as applied to claim 73, and further in view of Allen (US 4746935).

Maeda, as modified, discloses the claimed invention as discussed above, except wherein the barrier/orifice structure includes a polymer layer.

Allen discloses a printhead having a barrier structure for defining a nozzle array, wherein the barrier/orifice structure includes a polymer layer (*column 3, lines 52-60*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printthead disclosed by Maeda, as modified, such as the barrier/orifice structure includes a polymer layer as disclosed by Allen. The motivation for doing so would have been to reduce crosstalk and obtain a long operation life for the thermal ink jet resistors as taught by Allen (*column 3, lines 53-58*).

Allowable Subject Matter

Claims 40-44, 78-79, 81-83 are allowed and claims 50-51, 62, 70-71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claim 50: The primary reasons for the indication of the allowability of the claim is the inclusions therein, in combination as currently claimed, of the limitation that is wherein the substrate has a plurality of fluid feed holes formed therein to provide fluid to each of the subgroups of drop generators neither disclosed nor taught by the cited prior art of record, alone or in combination.

Referring to claims 51, 62, 70-71: The primary reasons for the indication of the allowability of the claims is the inclusions therein, in combination as currently claimed, of the limitation that is wherein the substrate includes a thin film layer that overlays the fluid feed slot, the thin film layer having openings that couple each of the subgroups to the fluid feed slot neither disclosed nor taught by the cited prior art of record, alone or in combination.

Referring to claim 40-41, 78: The primary reasons for the indication of the allowability of the claims is the inclusions therein, in combination as currently claimed, of the limitation that is the barrier/orifice structure further comprising a continuous rib portion extending between

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adjacent first and second ones of the plurality of nozzle columns and over said ink feed slot to fluidically separate the first and second ones of the nozzle columns neither disclosed nor taught by the cited prior art of record, alone or in combination.

Claims 42-44, 79, and 81-83 are allowed because they depend directly/indirectly on claim 40, 41, or 78.

Response to Arguments

Applicant's arguments with respect to claims 46, 56, 65, 73 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151.

The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
January 25, 2005

Hai Chi Pham
HAI PHAM
PRIMARY EXAMINER